

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-4 (Withdrawn)

Claim 5 (Original): A machining apparatus for an integrated piping plate composed of a plurality of plates joined together, and in which an instrument and a component constituting an apparatus are disposed, or the instrument is disposed, or the component is disposed, on one of or both of surfaces of the integrated piping plate, and

the instrument and the component are connected, or the instrument is connected, or the component is connected, by fluid channel grooves formed in joining surfaces of the plates, and communication holes formed in the plates, and comprising:

weld groove machining means for forming grooves for weld grooves in the plates so as to extend along entire periphery of the fluid channel grooves; and

welding means which, in succession to machining of the grooves for the weld grooves by the weld groove machining means, welds the grooves for the weld grooves to weld the joining surfaces of the plates around the entire periphery of the fluid channel grooves, thereby joining the plates.

Claim 6 (Currently Amended): Machining equipment for an integrated piping plate composed of a plurality of plates joined together, and in which

an instrument and a component constituting an apparatus are disposed, or the instrument is disposed, or the component is disposed, on one of or both of surfaces of the integrated piping plate, and

the instrument and the component are connected, or the instrument is connected, or the component is connected, by fluid channel grooves formed in joining surfaces of the plates, and communication holes formed in the plates, and comprising:

plate supply means for supplying the plates having the fluid channel grooves, or the communication holes, or the fluid channel grooves and the communication holes, formed therein beforehand;

weld groove machining means for forming grooves for weld grooves in the plates, which have been supplied by the plate supply means, so as to extend along entire periphery of the fluid channel grooves, the plate supply means supplying one plate from one direction and superimposing the same on another plate supplied from another direction; and

welding means which, in succession to machining of the grooves for the weld grooves by the weld groove machining means, welds the grooves for the weld grooves to weld the joining surfaces of the superimposed plates around the entire periphery of the fluid channel grooves, thereby joining the plates.

Claim 7 (Currently Amended): Machining equipment for an integrated piping plate composed of a plurality of plates joined together, and in which

an instrument and a component constituting an apparatus are disposed, or the instrument is disposed, or the component is disposed, on one of or both of surfaces of the integrated piping plate, and

the instrument and the component are connected, or the instrument is connected, or the component is connected, by fluid channel grooves formed in joining surfaces of the plates, and communication holes formed in the plates, and comprising:

plate supply means for supplying the plates;

machining means for forming the fluid channel grooves, or the communication holes, or the fluid channel grooves and the communication holes, in the plates supplied by the plate supply means;

weld groove machining means for forming grooves for weld grooves in the plates, which have been machined by the machining means, so as to extend along entire periphery of the fluid channel grooves, the plate supply means supplying one plate from one direction and superimposing the same on another plate supplied from another direction; and

welding means which, in succession to machining of the grooves for the weld grooves by the weld groove machining means, welds the grooves for the weld grooves to weld the joining surfaces of the superimposed plates around the entire periphery of the fluid channel grooves, thereby joining the plates.

Claim 8 (canceled)

Claim 9 (Currently Amended): Machining equipment for an integrated piping plate composed of a plurality of plates joined together, and in which

an instrument and a component constituting an apparatus are disposed, or the instrument is disposed, or the component is disposed, on one of or both of surfaces of the integrated piping plate, and

the instrument and the component are connected, or the instrument is connected, or the component is connected, by fluid channel grooves formed in joining surfaces of the plates, and communication holes formed in the plates, and comprising:

plate supply means for supplying the plates having the fluid channel grooves, or the communication holes, or the fluid channel grooves and the communication holes, formed therein beforehand, the plate supply means supplying one plate from one direction and superimposing the same on another plate supplied from another direction; and

friction stir welding means for welding the joining surfaces of the superimposed plates, which have been supplied by the plate supply means, around entire periphery of the fluid channel grooves, thereby joining the plates.

Claim 10 (Currently Amended): Machining equipment for an integrated piping plate composed of a plurality of plates joined together, and in which

an instrument and a component constituting an apparatus are disposed, or the instrument is disposed, or the component is disposed, on one of or both of surfaces of the integrated piping plate, and

the instrument and the component are connected, or the instrument is connected, or the component is connected, by fluid channel grooves formed in joining surfaces of the plates, and communication holes formed in the plates, and comprising:

plate supply means for supplying the plates;

machining means for forming the fluid channel grooves, or the communication holes, or the fluid channel grooves and the communication holes, in the plates supplied by the plate supply means, the plate supply means supplying one plate from one direction and superimposing the same on another plate supplied from another direction; and

friction stir welding means for welding the joining surfaces of the superimposed plates, which have been machined by the machining means, around entire periphery of the fluid channel grooves, thereby joining the plates.

Claim 11 (Withdrawn): The machining method of claim 1, 2 or 4, further comprising:
performing numerical control as tracer means for machining.

Claim 12 (Currently Amended): The machining apparatus of claim 5 ~~or 8~~, further comprising:

control means for performing numerical control as tracer means for machining.

Claim 13 (Original): The machining equipment of claim 6, 7, 9 or 10, further comprising:

control means for performing numerical control as tracer means for machining.

Claims 14-47 (Withdrawn)

Claim 48 (New): A machining apparatus for an integrated piping plate, which superimposes a second plate on a first plate having fluid channel grooves machined in a joining surface, and friction stir welds the first plate and the second plate, comprising:

friction stir welding means which, in welding the first plate and the second plate, inserts a tip tool of a friction stir welding machine only into the second plate up to a position where the first plate and the second plate can be welded by frictional heat generated by rotating the tip tool, and moves the tip tool while following an outer periphery of the fluid channel grooves, thereby friction stir welding the joining surfaces of the first plate and the second plate around the entire periphery of the fluid channel grooves, to join the first plate and the second plate.

Claim 49 (New): Machining equipment for an integrated piping plate, which superimposes a second plate on a first plate having fluid channel grooves machined in a joining surface , and friction stir welds the first plate and the second plate, comprising:

plate supply means for supplying the first plate having the fluid channel grooves formed therein beforehand, and the second plate; and

friction stir welding means which, in welding the first plate and the second plate supplied by the plate supply means, inserts a tip tool of a friction stir welding machine only into the second plate up to a position where the first plate and the second plate can be welded by frictional heat generated by rotating the tip tool, and moves the tip tool while following an outer periphery of the fluid channel grooves, thereby friction stir welding the joining surfaces of the first plate and the second plate around the entire periphery of the fluid channel grooves, to join the first plate and the second plate.

Claim 50 (New): machining equipment for an integrated piping plate, which superimposes a second plate on a first plate having fluid channel grooves machined in a joining surface, and friction stir welds the first plate and the second plate, comprising:

plate supply means for supplying the first plate and the second plate;

machining means for forming the fluid channel grooves in the first plate supplied by the plate supply means; and

friction stir welding means which, in welding the first plate machined by the machining means, and the second plate, inserts a tip tool of a friction stir welding machine only into the second

plate up to a position where the first plate and the second plate can be welded by frictional heat generated by rotating the tip tool, and moves the tip tool while following an outer periphery of the fluid channel grooves, thereby friction stir welding the joining surfaces of the first plate and the second plate around the entire periphery of the fluid channel grooves, to join the first plate and the second plate.